

MODULE 27105

FLOOR SYSTEMS

(27105 LESSON 6)

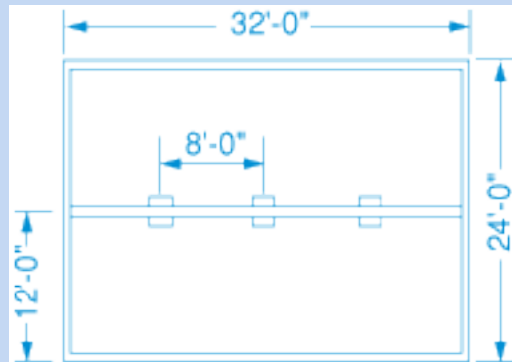
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8.0.0 Guidelines for Determining Proper Girder and Joist Sizes

- The sizes of girders and joists are normally specified by the architect or structural engineer. However, it is useful for a carpenter to know how the sizes are determined.

Note: The girder examples in the text are related to *Figure 39*



- DETERMINE LENGTH OF JOIST SPAN AND GIRDER WIDTH
- FIND TOTAL FLOOR LOAD PER SQUARE FOOT CARRIED BY JOIST AND BEARING PARTITIONS
- CALCULATE TOTAL LOAD ON GIRDER
- SELECT PROPER SIZE OF GIRDER IN ACCORDANCE WITH LOCAL CODES

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Figure 39 Sizing girders.

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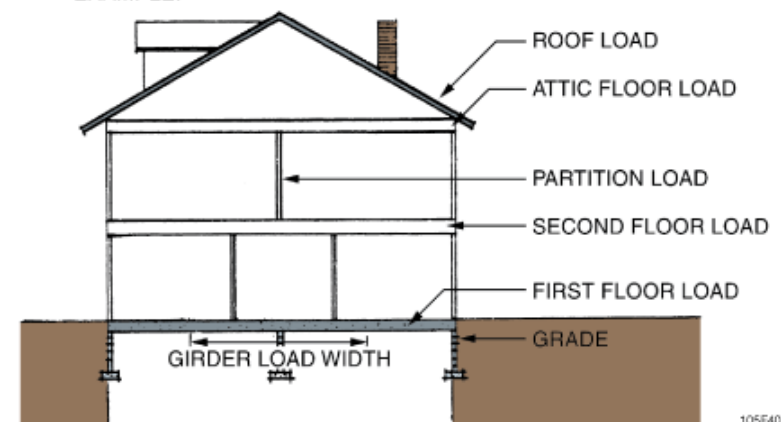
8.0.0 Guidelines for Determining Proper Girder and Joist Sizes

- A procedure for sizing girders is provided in the text. The factors that enter into the determination are the girder load width and the total floor load.

GIRDER LOADS (POUNDS PER SQUARE FOOT)		
	LIVE LOAD*	DEAD LOAD
ROOF	20	10
ATTIC FLOOR	20	20 (FLOORED) 10 (NOT FLOORED)
SECOND FLOOR	40	20
PARTITIONS		20
FIRST FLOOR	40	20 (CEILING PLASTERED) 10 (CEILING NOT PLASTERED)
PARTITIONS		20

*USUAL LOCAL REQUIREMENTS

EXAMPLE:



105F40.EPS

Figure 40 Floor loads.

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8.0.0 Guidelines for Determining Proper Girder and Joist Sizes

- Select the proper size of girder according to local codes. *Table 3* is typical. It indicates safe loads on standard-size girders for spans from 6' to 10'.

Table 3 Typical Safe Girder Loads

Nominal Girder Size	Safe Load in Pounds for Spans Shown				
	6 ft	7 ft	8 ft	9 ft	10 ft
6 × 8 solid	8,306	7,118	6,220	5,539	4,583
6 × 8 built-up	7,359	6,306	5,511	4,908	4,062
6 × 10 solid	11,357	10,804	9,980	8,887	7,997
6 × 10 built-up	10,068	9,576	8,844	7,878	7,086
8 × 8 solid	11,326	9,706	8,482	7,553	6,250
8 × 8 built-up	9,812	8,408	7,348	6,554	5,416
8 × 10 solid	15,487	14,732	13,608	12,116	10,902
8 × 10 built-up	13,424	12,968	11,792	10,504	9,448

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8.0.0 Guidelines for Determining Proper Girder and Joist Sizes

- Sizing of joists is determined by the span and the load per square foot. A rule of thumb is 50 pounds per square foot (40 live load; 10 dead load).

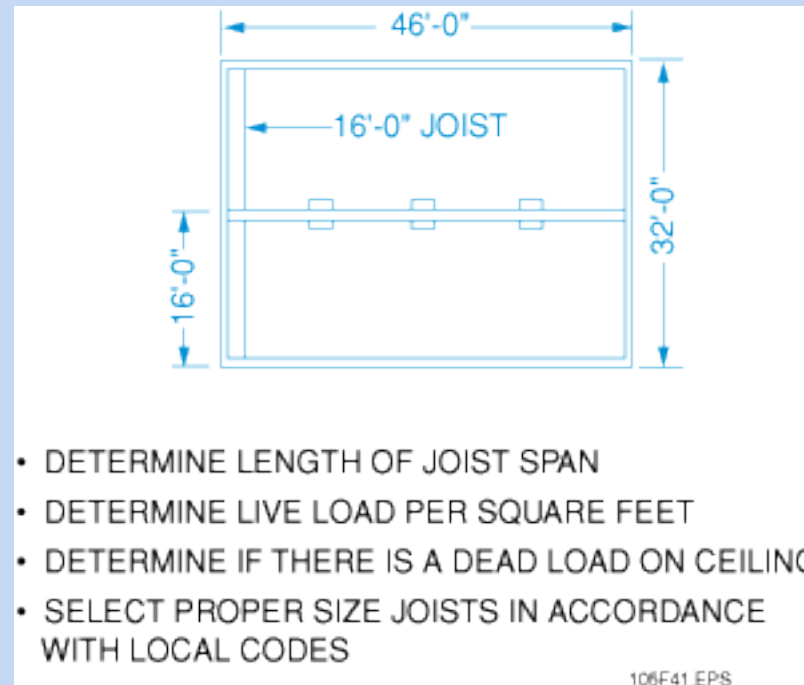


Figure 41 Sizing joists.

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8.0.0 Guidelines for Determining Proper Girder and Joist Sizes

- Select the proper size of joists according to local codes or by using the latest tables available from wood product manufacturers or sources such as the National Forest Products Association and the Southern Forest Products Association. *Table 4* indicates maximum safe spans for various sizes of wood joists under ordinary load conditions.

Table 4 Safe Joist Spans

Nominal Joist Size	Spacing	30# Live Load	40# Live Load	50# Live Load	60# Live Load
2 × 6	12"	14'-10"	13'-2"	12'-0"	11'-1"
	16"	12'-11"	11'-6"	10'-5"	9'-8"
	24"	10'-8"	9'-6"	8'-7"	7'-10"
2 × 8	12"	19'-7"	17'-5"	15'-10"	14'-8"
	16"	17'-1"	15'-3"	13'-10"	12'-9"
	24"	14'-2"	13'-6"	11'-4"	10'-6"
2 × 10	12"	24'-6"	21'-10"	19'-11"	18'-5"
	16"	21'-6"	19'-2"	17'-5"	16'-1"
	24"	17'-10"	15'-10"	14'-4"	13'-3"
2 × 12	12"	29'-4"	26'-3"	24'-0"	22'-2"
	16"	25'-10"	23'-0"	21'-0"	19'-5"
	24"	21'-5"	19'-1"	17'-4"	16'-9"
3 × 8	12"	24'-3"	21'-8"	19'-10"	18'-4"
	16"	21'-4"	19'-1"	17'-4"	16'-0"
	24"	17'-9"	15'-9"	14'-4"	13'-3"
3 × 10	12"	30'-2"	27'-1"	34'-10"	23'-0"
	16"	26'-8"	23'-10"	21'-9"	20'-2"
	24"	22'-3"	19'-10"	18'-1"	16'-8"



End of Presentation